

## 2. ANIMALS OVER WINTER

AGE 7-11

### Objectives

To understand some of the adaptations that animals can adopt to survive in winter conditions.

### The big questions

How do animals survive through the winter?

### Unit summary

Children will think about the different survival strategies animals in temperate regions employ in order to survive through the winter. Children will compare these strategies to adaptations exhibited by animals in the Polar Regions, and will identify the similarities and differences between the ways in which animals are adapted to survive the changing environmental conditions in winter.

### Background

This activity is designed to introduce 7 to 11 year olds to some of the adaptations that animals can adopt to survive winter in temperate zones, reinforcing the concept that animals are adapted to the environment in which they live. Children will explore some of the different winter survival strategies employed by species living in temperate regions and will complete a worksheet which requires them to sort different animals according to whether they migrate, hibernate, store food or grow a thick coat in order to survive over winter. The worksheet activity is followed by a class discussion about which type of overwintering behaviour each group of species employs and why. Children are asked whether they are able to think of other species not listed which might use similar mechanisms to survive the winter.

Children will compare animals inhabiting temperate regions with two case studies of polar species which are well adapted to survive in cold environments year-round, and will identify the differences and similarities between their survival strategies. Children will be introduced to the concept that adaptations for survival may be behavioural, anatomical or physiological, and that many animals exhibit a combination of adaptations

to their habitat which help them survive. To finish the session and consolidate their understanding, children will compile a case study of one of the species featured in the presentation (excluding the polar case studies), identifying and explaining the different adaptations of the species that help them survive in winter. Children will produce a poster or PowerPoint presentation to showcase the different adaptations of their case study species.

### Curriculum links

#### Science year 6

- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

### Working scientifically

#### Lower key stage 2

- asking relevant questions and using different types of scientific enquiries to answer them
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

#### Upper key stage 2

- planning different types of scientific enquiries to answer questions
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

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### Resources

Animals over winter PowerPoint presentation [www.stem.org.uk/rxzzs](http://www.stem.org.uk/rxzzs), Animals over winter children worksheets (one per children), computers or laptops with internet access for children research, large white paper for making posters (or access to PowerPoint for creating a presentation), stationery for making posters (pens, pencils, colouring pencils, etc).

### Introduction

Begin by introducing the concept of how animals are adapted to survive over winter by working through the Animals over winter PowerPoint presentation. See notes on the PowerPoint slides for further guidance and information. Please note: there are optional videos (from ARKive and external sites) in the presentation that require internet access.

Introduce some of the strategies that animals in temperate regions might adopt to cope with changing conditions in winter – migration, hibernation, changes in behaviour such as food caching, growing a thick coat, etc. Before moving on to the worksheet activity, elicit childrens' understanding of the terms 'hibernation' and 'migration'. If necessary, provide a brief explanation (eg migration = to move from one region to another; hibernation = to become inactive over winter). These will be covered in more detail later in the PowerPoint presentation.

### Activity 1

Hand out the Animals over winter worksheet and use it to assess children's prior understanding of the different kinds of adaptation by asking them to classify each species according to its winter survival strategy.

Once the children have completed the worksheet, initiate a class discussion and work together through the answers – ask why species exhibit these adaptations to winter, why different species have different adaptations and whether they can think of other species not listed that might exhibit similar adaptations.

### Activity 2

Continue working through the PowerPoint presentation and build on children's understanding of winter survival strategies of temperate species (migration, hibernation, adaptations in resident species) by exploring the concepts in greater depth. Give children the opportunity to ask questions throughout and prompt them to suggest examples of other species that exhibit the adaptation being discussed.

### Activity 3

Before moving on to the final activity, work through the two polar case studies to look at examples of species that are well adapted to cold environments year-round. Encourage children to identify and list the similarities and differences between polar species and the temperate species they have discussed. Introduce the children to the idea that adaptations for survival may be behavioural, anatomical/morphological or physiological, and that many animals exhibit a combination of adaptations to their habitat which help them survive.

### Activity 4

To finish the session and consolidate children's understanding, get them to compile a case study of one of the species featured in the presentation (excluding the polar case studies), identifying and explaining the different adaptations of the species that help it survive in winter. The children could produce a poster or PowerPoint presentation to showcase the different adaptations for their case study, or communicate their findings in any other suitable format for the activity (eg a verbal presentation, written report).

### Plenary

Children present their findings to the class.

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### Follow up session

#### Adaptation – design a species

Give each group a winter scene template ([www.stem.org.uk/rxzzs](http://www.stem.org.uk/rxzzs)) and colouring pencils or felt tip pens. Ask the children to design their own species that is adapted to a winter habitat. Ensure children annotate their drawings to explain the adaptations. Ask children to present their species to the class, emphasising why particular adaptations were chosen.

#### Make a winter habitat

Many animals, particularly those that are less active during the colder months, find quiet, undisturbed areas to spend the winter. Making winter habitats for the species that hibernate over winter in your local area is a great hands-on activity that will get the children thinking about how different animals use different habitats within the local environment, and is a practical activity that can easily be carried out in places such as your garden, school playground, wildlife garden or playing field.

#### How to run the session:

1. Identify safe, suitable sites to create the winter habitats, such as behind sheds or school buildings, in a quiet corner of the garden, etc.
2. With the class, brainstorm the different species that are found in the local area. You might also be able to take the class outdoors and make some observations 'in the field'.
3. Discuss which species found in the local area require a different habitat in the winter. Generally, the list of species might include things like small-medium mammals (hedgehogs, mice, voles, squirrels, etc), reptiles, amphibians, small birds and invertebrates.
4. Think about the different habitats you can create and the materials you need. Ideas for habitats could include:
  - a. A pile of logs – great for mini-beasts and small mammals.
  - b. A pile of rocks and stones – excellent for lots of different invertebrates, reptiles and amphibians.
  - c. A pile of leaves – ideal for invertebrates and some small mammals.